

**Modeling Workgroup Meeting  
5 October 2005 at 10 AM-12 PM  
EPA Region 2, Room 27D**

Participants: See sign-in sheet.

HydroQual gave a presentation on progress made to date on the hydrodynamic component of the Passaic River/Newark Bay model.

What are we using in the model as existing conditions in Newark Bay given that the 50-foot deepening project is on-going?

- HydroQual recommends that the calibration proceed with bathymetry updated once per year, for years Harbor Deepening Projects were active, and that for future projections, the final bathymetry resulting from the completion of the 50-foot deepening project be used.
- The work group should discuss this recommendation at a future meeting.

Is the model being calibrated based on Water Year 1995 and validated based on 2004?

- Yes, although physical parameters (such as bathymetry) change from 1995 to 2004 (no change in model coefficients).
- There is no water current data available for 1995.

*Note: After the meeting, HydroQual retrieved Tierra Solutions' 1995 hydrodynamic data from PREmis. They will be evaluated and incorporated into the model as appropriate.*

- Malcolm Pirnie and Rutgers hydrodynamic data collected in 2005 will be added to the calibration later.

Availability and use of data from the Corps-NY's flood control project:

- Joe Letter has not yet provided the ADCP data from the Corps' flood control project, so Scott Nicholson will assist in reminding him of the long-standing request. Bathymetric data from the flood control project were received by HydroQual.

*Note: After the meeting (on 10/7/05), ADCP data collected in the Summer of 1994 were received from Joe Letter.*

- HydroQual had not planned on using the flood control project data for calibration, because there are more complete data sets available for 1995 and 2004. However, the physical data from the flood control project will be incorporated into the modeling effort.

What still needs to be done on the Newark Bay side of the modeling effort?

- The calibration for Newark Bay also shows good agreement between data and model results, but HydroQual did not show those results, for lack of time during this work group meeting.
- HydroQual is still working on incorporating 2000-02 ADCP data collected by Rutgers in Newark Bay/Arthur Kill.
- Rutgers' ADCP deployment did not extend into the Hackensack River, so there is no ADCP data available for that river.

Newark Bay model plan addendum mentions a discrepancy between Pence model and Rutgers data. Has HydroQual resolved this yet?

- Not yet, but HydroQual will be working on that using the above-mentioned 2003 Rutgers ADCP data from Newark Bay.

Will the model components be built one after the other (hydrodynamic followed by sediment transport followed by fate & transport followed by food chain) or will there be some work done in parallel?

- Some components may be built in parallel, but HydroQual needs to build a large portion of the hydrodynamic component before starting the other components.
- As HydroQual proceeds to the later components, there may be some revisiting of the earlier components, if there is unsatisfactory agreement between model calibration and data.

Is there an opportunity to revisit the grid scale, or does HydroQual plan to go forward with proposed grid scale?

- The modeling is going forward with the proposed grid scale, but it is not too late to make changes.
- The work group requested more detail on grid size and boundary conditions to evaluate the ability of the model to simulate potential remedies.
- HydroQual will advise Alice Yeh on how best to transmit the requested information.

Based on the presentation, the model seems to be well calibrated, but the work group would like to see more quantitative analysis of model fit.

- This presentation was intended to give the work group a mid-stream update on progress of hydrodynamic model calibration. As the calibration is completed, there will be a quantitative analysis of model fit. Alice Yeh will let the work group know when that analysis will be available.
- In the meantime, the work group should refer to the following paper on SWEM: Blumberg, A.F., L.A. Khan and J.P. St. John, "Three Dimensional Hydrodynamic Model of New York Harbor Region", J. Hydraulic Engineering, 125, 799-816, 1999. Similar analyses will be presented for the Passaic River/Newark Bay model.

Will a salt balance be performed?

- Mike Erickson, who asked the question, will provide more information on what points in the 17-miles and over what intervals he would like to see a salt balance performed.

There was concern expressed that sources of contamination into the Lower Passaic River might be underestimated by the model, particularly on the north shore of the Harrison Reach.

- HydroQual will provide a list of sources of water included in the hydrodynamic model, so that the work group may help identify missing inputs. [Alice Yeh to distribute]

Was the wetting/drying protocol only used in the Hackensack Meadowlands?

- Wetting/drying protocol was used wherever the model calculated that water elevations would drop below the bottom elevation (e.g., in Newark Bay mudflats and in Passaic River near Rutherford, among others).

Hackensack Meadowlands topography is rough, so that it is not always flooded everywhere and may be difficult to model.

- 2001-02 marshlands data from the Corps' Meadowlands restoration project were used to identify places where the land is not usually flooded.
- The model does not account for minor creeks (too complex).
- The Meadowlands is included in the model, only because it is needed to get the water volume exchanges and salinity correctly calibrated in the Passaic River/Newark Bay. Therefore, there is no plan for a mechanistic simulation of detailed hydrodynamics in the Hackensack Meadowlands. Alice Yeh will check Modeling Plan to make sure that this is clearly stated there.
- Further discussion is needed over whether Berry's Creek needs to be modeled.

Is wind-wave action in Newark Bay included in the model?

- Computation of wind-wave action is a feature included in the model, but not yet turned on. Hydrodynamic component includes wind stress, but not wind-wave action.
- Wind-wave action will be a forcing function in the sediment transport component.

Is ship traffic in Newark Bay included in the model as a source of sediments?

- The sediment transport component is not yet built.

What is the extent of TAC involvement?

- TAC conference calls are held periodically to discuss progress and there was a TAC meeting on 10/4.

What happened to the comments that were provided on the April 2005 draft Modeling Plan?

- Alice Yeh is still working on compiling the comments for HydroQual to revise the plan.

The work group would like to discuss conceptual model development as a guide to model implementation.

Tierra Solutions will be implementing a bathymetric survey in Newark Bay in October.

The work group would prefer to see interim written materials circulated before the meetings.

- This meeting was meant to provide the work group with a mid-stream progress report. Providing a written document would have meant postponing the meeting, so the choice was made to proceed on the scheduled meeting date with a presentation.
- Alice Yeh will try to circulate a brief memo on what will be discussed in upcoming meetings or send the presentation ahead of the meetings.

The work group may need to discuss what-if scenarios to test the models.

The real concern of the work group may be with the sediment transport and other components of the model. Sources become more important in those components.

Scott Nicholson is tracking the availability of data collected by Honeywell in the Hackensack. He has asked Rick Wenning for the data.





# SIGN-IN

**MEETING:** Lower Passaic River Restoration Project: Modeling Work Group Meeting

**LOCATION:** EPA Region 2, Room 27D (290 Broadway, 27<sup>th</sup> floor, NYC)

**DATE/TIME:** 5 October 2005 at 10:00 AM – 12:00 PM

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